IN THE CLAIMS:

1-19. (canceled)

20. (Currently amended) A method for operating MIMO air interfaces in mobile communication systems, the method comprising:

transmitting from a transmitting device ~~a~~ radio signals over a MIMO channel comprising a number of m sub channels, said radio signals each having a signal flow path;

receiving the radio signals in a receiving device;

assigning different polarizations to each of the radio signals that are to be transmitted and received on the sub channels by inserting delay lines into the signal flow paths and thereby generating active polarizations in said radio signals;

superimposing the differently polarized radio signals of all sub channels; and

mutually conducting to an ~~superimposed~~ antenna the superimposed radio signals of all sub channels, the antenna comprising several spatially closely adjacent partial antennas.

21. (Previously Presented) The method according to claim 20, wherein the partial antennas have phase centers which coincide.

22. (Previously Presented) The method according to claim 20, and further comprising governing the assignment of the polarizations of the radio signals sent out on the sub channels by a control facility.

23. (Previously Presented) The method according to claim 21, and further comprising governing the assignment of the polarizations of the radio signals sent out on the sub channels by a control facility.

24. (Previously Presented) The method according to claim 20, and further comprising altering the polarizations of the signals sent out on the sub channels in predetermined intervals of time.

25. (Previously Presented) The method according to claim 21, and further comprising altering the polarizations of the signals sent out on the sub channels in predetermined intervals of time.

26. (Previously Presented) The method according to claim 22, and further comprising altering the polarizations of the signals sent out on the sub channels in predetermined intervals of time.

27. (Previously Presented) The method according to claim 20, and further comprising synchronically altering the polarizations of the signal sent out on the sub channels.

28. (Previously Presented) The method according to claim 21, and further comprising synchronically altering the polarizations of the signal sent out on the sub channels.

29. (Previously Presented) The method according to claim 22, and further comprising synchronically altering the polarizations of the signal sent out on the sub channels.

30. (Previously Presented) The method according to claim 20, and further comprising exchanging among each other in predetermined intervals of time the polarizations of the signals sent out on the sub channels.

31. (Previously Presented) The method according to claim 21, and further comprising exchanging among each other in predetermined intervals of time the

polarizations of the signals sent out on the sub channels.

32. (Previously Presented) The method according to claim 20, and further comprising assigning to each signal sent out on the sub channels a polarization selected by chance from a volume of predetermined polarizations.

33. (Previously Presented) The method according to claim 21, and further comprising assigning to each signal sent out on the sub channels a polarization selected by chance from a volume of predetermined polarizations.

34. (Currently Amended) The method according to claim 20, and further comprising:

sending at least some of the radio signals that are sent out on the ~~MIMO~~ MIMO channel by a means of digital multithread; and

modulating the radio signals sent out by means of the digital multithread, whereby for the duration of at least one bit of the multithread the polarizations of the signals sent out on the sub channels remain same.

35. (Currently Amended) The method according to claim 21, and further comprising:

sending at least some of the radio signals that are sent out on the ~~MIMO~~ MIMO channel by a means of digital multithread; and

modulating the radio signals sent out by means of the digital multithread, whereby for the duration of at least one bit of the multithread the polarizations of the signals sent out on the sub channels remain same.

36. (Previously Presented) The method according to claim 20, and further comprising:

sending at least some of the radio signals that are sent out on the MIMO channel; and

modulating those radio signals by a digital multithread, whereby the polarizations of the signals sent out on the sub channels change at least once during the duration of at least one bit of the multithread.

37. (Previously Presented) The method according to claim 21, and further comprising:

sending at least some of the radio signals that are sent out on the MIMO channel; and

modulating those radio signals by a digital multithread, whereby the polarizations of the signals sent out on the sub channels change at least once during the duration of at least one bit of the multithread.

38. (Previously Presented) The method according to claim 20, and further comprising

determining the polarization of the signals sent out on the sub channels by the relationship of the amounts of its performances a and/or $(1\text{-}a)$ and/or its mutual phase situation and/or its time offset (t_1, t_2).

39. (Previously Presented) The method according to claim 21, and further comprising determining the polarization of the signals sent out on the sub channels by the relationship of the amounts of its performances a and/or $(1\text{-}a)$ and/or its mutual phase situation and/or its time offset (t_1, t_2).

40. (Previously Presented) The method according to claim 20, wherein the polarizations are switchable and the number of switchable polarizations is at least as large as the number m of sub channels.

41. (Previously Presented) The method according to claim 21, wherein the polarizations are switchable and the number of switchable polarizations is at least as large as the number m of sub channels.

42. (Currently Amended) A device for operating MIMO air interfaces in mobile communications systems, the device comprising:

a transmitting device for transmitting ~~a~~ radio signals over a MIMO air interface comprised of a number m of sub channels;

a receiving device for the reception of the radio signals;

facilities for the assignment of different polarizations to the radio signals that ~~is~~ are to be sent out and received on the sub channels, said facilities including signal flow paths for said radio signals and delay lines inserted into the signal flow paths which enable the generation of active polarizations of the signals;

means for superimposing all of the differently polarized radio signals from the sub channels; and

an ~~superimposed~~ antenna constructed from several spatially closely adjacent partial antennas to which ~~all of the differently polarized radio signals from the sub channels~~ the superimposed radio signals are conducted.

43. (Previously Presented) The device according to claim 42, wherein the partial antennas have phase centers which coincide.

44. (Previously Presented) The device according to claim 42, wherein the antenna is a cross dipole.

45. (Previously Presented) The device according to claim 43, wherein the antenna is a cross dipole.

46. (Previously Presented) The device according to claim 42, wherein said facilities comprise means to change the phase situation and/or the time delay (t) of the radio signals.

47. (Previously Presented) The device according to claim 43, wherein said facilities comprise means to change the phase situation and/or the time delay (t) of

the radio signals.

48. (Previously Presented) The device according to claim 44, wherein said facilities comprise means to change the phase situation and/or the time delay (t) of the radio signals.

49. (Previously Presented) The device according to claim 42, wherein said facilities comprise means for dividing the radio signal into several partial signals of various performance *a* and 1-*a*.

50. (Previously Presented) The device according to claim 43, wherein said facilities comprise means for dividing the radio signal into several partial signals of various performance *a* and 1-*a*.

51. (Previously Presented) The device according to claim 44, wherein said facilities comprise means for dividing the radio signal into several partial signals of various performance *a* and 1-*a*.

52. (Previously Presented) The device according to claim 42, and further comprising a control facility to control the installations.

53. (Previously Presented) The device according to claim 43, and further comprising a control facility to control the installations.

54. (Previously Presented) The device according to claim 44, and further comprising a control facility to control the installations.